Method for production of asymmetric carotenoids

Description of Technology: This invention is in the field of microbiology. More specifically, this invention pertains to methods for the microbial production of monocyclic carotenoids.

Patent Listing:

1. **US Patent No. 7,063,955**, Issued June 20, 2006, "Method for production of asymmetric carotenoids"

http://patft.uspto.gov/netacgi/nph-Parser?Sect2=PTO1&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&d=PALL&RefSrch=yes&Query=PN%2F7063955

Market Potential: Carotenoids are pigments that are ubiquitous throughout nature and synthesized by all oxygen evolving photosynthetic organisms, and in some heterotrophic growing bacteria and fungi. Carotenoids provide color for flowers, vegetables, insects, fish and birds. Colors of carotenoid range from yellow to red with variations of brown and purple. As precursors of vitamin A, carotenoids are fundamental components in human diet, playing an important role in human health. Industrial uses of carotenoids include pharmaceuticals, food supplements, animal feed additives and colorants in cosmetics to mention a few.

Because animals are unable to synthesize carotenoid de novo, they must obtain them by dietary means. Thus, manipulation of carotenoid production and composition in plants or bacteria can provide new or improved source for carotenoids.

The problem to be solved therefore is to provide methods and materials useful for the selective production of asymmetric carotenoids containing a single .beta.-ionone ring. Applicants have solved the stated problem by isolating and characterizing genes encoding for a novel lycopene .beta.-cyclase (crtL), isolated from both Rhodococcus and Deinococcus, which encode polypeptides that selectively produces monocyclic (.beta.-ionone ring) carotenoids without significant bicyclic carotenoid synthesis.

Benefits:

- Allows for the production of asymmetric carotenoids

Applications:

- Pharmaceutical industry, food supplements, cosmetics, and animal feed additives.

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